



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,178	05/04/2006	Ulrike Licht	289724US0X PCT	5199
22850	7590	11/20/2008	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			LOEWE, ROBERT S	
ART UNIT	PAPER NUMBER			
			1796	
NOTIFICATION DATE	DELIVERY MODE			
11/20/2008	ELECTRONIC			

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No. 10/578,178	Applicant(s) LICHT ET AL.
	Examiner ROBERT LOEWE	Art Unit 1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 08 October 2008.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-19 and 21-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-19,21-24,28 and 29 is/are rejected.
- 7) Claim(s) 25-27,30 and 31 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____
- 5) Notice of Informal Patent Application
 6) Other: _____

DETAILED ACTION

Response to Arguments

Applicant's amendments have overcome the claim objection and 112, second paragraph rejection made in the previous Office action.

Applicant's arguments regarding the 102(b)/103(a) rejection of Reusmann et al. have been fully considered. While Applicants present several arguments traversing this rejection, the Examiner is persuaded by another line of reasoning, namely that the final dispersions taught by Reusmann et al. contain some organic solvent (which is carried over from the solution polymerization), while the dispersions of the instant invention are entirely free of organic solvent. It is because of this reason that the 102(b)/103(a) rejections of Reusmann et al. have been removed.

Regarding this point, Applicants argue that Reusmann teaches a process which yields an inhomogeneous polysiloxane-polyurethane dispersion, unlike Applicants. However, this observation was noted in a comparison example not according to the invention of Reusmann et al.

Applicant's only arguments regarding the prior art rejections of the previously presented claims (Licht et al. in view of Reusmann et al. and Reusmann et al. in view of Licht et al.) is that in light of Applicants evidence that Reusmann et al. does not teach the same reaction product as that which is obtained via a miniemulsion process, a person having ordinary skill in the art would not have any motivation to modify the processes of Reusmann et al. to include the miniemulsion conditions of Licht or to modify Licht to include the specific polysiloxane of Reusmann et al. This argument is not found to be persuasive for the sole reason that Licht et al. provides ample

motivation to employ miniemulsion polymerization reactions (see rejections below). A person having ordinary skill in the art would appreciate the motivation taught by Licht et al. and would have found it obvious to incorporate the miniemulsion processes as taught by Licht et al. to the compositions taught by Reusmann et al.

Pages 12 and 13 of Applicants arguments/remarks are directed to the newly added claims. Regarding newly added claims 22 and 23, Applicants argue that Reusmann et al. teaches other additional diols which are to be excluded in instant claims 22 and 23. This argument is persuasive regarding the Reusmann et al. in view of Licht et al. rejection but is not persuasive in the prior art rejection of Licht et al. in view of Reusmann et al. since Licht et al. explicitly teaches several examples with only one polyol component (see rejection below).

Regarding claims 28 and 29, Applicants argue that because Reusmann et al. teaches a two-step process, there would be no motivation to employ the one-step reaction strategy employed by Licht et al. This argument is not found to be persuasive because Licht et al. provides motivation to employ the one-step aqueous miniemulsion polymerization reactions in the compositions as taught by Reusmann et al.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-10, 13-16, 21-24, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Licht et al. (WO 02/064657) in view of Reusmann et al. (US patent application publication 2003/0198819). For convenience, the English language equivalent of WO 02/064657 (US 2004/0077777) will be relied upon.

Claims 1, 2, 13-16, 22-24 and 28: Licht et al. teaches an aqueous polyurethane dispersion (abstract), which is obtained by reacting polyisocyanates and isocyanate-reactive compounds in miniemulsion (abstract). The reactions taught by Licht et al. are carried out in a single aqueous reaction mixture to form aqueous polymer dispersions having droplet sizes which fall within the range of instant claim 28 (examples). Licht et al. further teaches that the isocyanate-reactive compounds preferably include diols (paragraph 0021) having a molecular weight of from 500 to 5000 g/mol (paragraph 0022) and can include polysiloxanes (paragraph 0028). Licht et al. therefore teaches that a polysiloxane diol having a molecular weight of from 500 to 5000 g/mol may be used. While Licht et al. teaches at least one polyisocyanate and at least one compound having isocyanate-reactive groups, Licht et al. does not require that more than one compound having isocyanate-reactive groups be present. Therefore, Licht et al. teaches an aqueous dispersion which is the reaction product of only a polyisocyanate and an isocyanate-reactive

compound. Further, many of the compositions explicitly taught by Licht et al. (Table 1) consist of one isocyanate and one isocyanate-reactive compound (diol).

Licht et al. does not explicitly teach that the polysiloxane satisfies the structural limitations of formula I of instant claim 1. However, Reusmann et al. teaches such polysiloxanes diols having the same molecular weights as taught by Licht et al. (paragraph 0033) and further teaches the same polysiloxane diols as those of the instant application (Tegomer 2111 and Tegomer 2311, paragraph 0036). Licht et al. and Reusmann et al. are combinable because they are from the same field of endeavor, namely, polysiloxane-polyurethane aqueous dispersions. At the time of the invention, a person having ordinary skill in the art would have found it obvious to employ the polysiloxanes as taught by Reusmann et al. into the aqueous miniemulsions taught by Licht et al. and would have been motivated to do so because Reusmann et al. teaches that the polysiloxanes diols in aqueous polyurethane dispersions are a critical ingredient which imparts a good soft feel effect without the need for additional flattening agents (paragraphs 0006-0007 and example 1 and comparative example 1). Reusmann et al. further teaches that polysiloxane-polyurethane dispersions can serve as components in a variety of applications, including serving as a binder component in elastic coatings and sealants and a release and antistick coatings (paragraphs 0088-0090).

Claim 3: Licht et al. further teaches an aqueous dispersion wherein the polyurethane is prepared from (a) polyisocyanates (paragraphs 0017-0019), (b) polyols of which (b1) 10 to 100 mol%, based on the total number of polyols (b) have a molecular weight of from 240 to 5000 g/mol (paragraphs 0027 and 0032) and (b2) 0 to 90 mol%, based on the total amount of polyols (b), have a molecular weight of from 62 to 500 g/mol (paragraph 0029 and 0032), and further

comprise (c) monomers which are reactive toward isocyanate groups such as non-functional hydroxyl-containing and amino-containing monomers (paragraph 0035). The hydroxyl and amino groups are inherently hydrophilic.

Claim 4: Licht et al. further teaches that the polyol (which can include polysiloxane diols) is present in the composition in amounts which satisfy the range of instant claim 4 (Table 1).

Claim 5: Licht et al. further teaches that the aqueous dispersion further comprises additional protective colloids or stabilizers which include surfactants such as polymeric fatty alcohols (paragraph 0056).

Claims 6 and 29: Licht et al. further teaches a process for preparing an aqueous polyurethane dispersion comprising: reacting polyisocyanates and isocyanate-reactive compounds in aqueous miniemulsion (abstract). The reactions taught by Licht et al. are carried out in a single aqueous reaction mixture to form aqueous polymer dispersions having droplet sizes which fall within the range of instant claim 29 (examples). Licht et al. further teaches that the isocyanate-reactive compounds comprise polysiloxane diols (paragraph 0028) to obtain an aqueous polyurethane dispersion. Licht et al. therefore teaches that a polysiloxane diol having a molecular weight of from 500 to 5000 g/mol may be used.

Licht et al. does not explicitly teach that the polysiloxane satisfies the structural limitations of formula I of instant claim 1. However, Reusmann et al. teaches such polysiloxanes diols having the same molecular weights as taught by Licht et al. (paragraph 0033) and further teaches the same polysiloxane diols as those of the instant application (Tegomer 2111 and Tegomer 2311, paragraph 0036). Licht et al. and Reusmann et al. are combinable because they are from the same field of endeavor, namely, polysiloxane-polyurethane aqueous dispersions. At

the time of the invention, a person having ordinary skill in the art would have found it obvious to employ the polysiloxanes as taught by Reusmann et al. into the aqueous miniemulsions taught by Licht et al. and would have been motivated to do so because Reusmann et al. teaches that the polysiloxanes diols in aqueous polyurethane dispersions are a critical ingredient which imparts a good soft feel effect without the need for additional flattening agents (paragraphs 0006-0007 and example 1 and comparative example 1). Reusmann et al. further teaches that polysiloxane-polyurethane dispersions can serve as components in a variety of applications, including serving as a binder component in elastic coatings and sealants and a release and antistick coatings (paragraphs 0088-0090).

Claim 7: Licht et al. further teaches that the miniemulsion process produces droplet sizes preferably ranging from 40 to 1000 nm, which encompasses the claimed range of instant claim 7 (paragraph 0038).

Claim 8: Licht et al. further teaches that the polyol component (b1), which includes polysiloxane diols, is prepared by reaction of their starting compounds during the preparation of the miniemulsion (paragraph 0062).

Claim 9: Licht et al. further teaches a method of making a coating using the aqueous dispersion of instant claim 1 (0060 and claim 20 therein).

Claim 10: Licht et al. does not explicitly teach that the compositions may be used as foam stabilizers. However, since Licht et al. does explicitly teach aqueous dispersions meeting the structural requirements of claim 1, it follows that such dispersions can inherently be used in the form of a foam stabilizer.

Claim 21: Licht et al. teaches that the particle size of the emulsified droplets preferably ranges from 40 to 1000 nm, which encompasses the claimed range of instant claim 7 (paragraph 0038).

Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Licht et al. (WO 02/064657), in view of Reusmann et al. (US patent application publication 2003/0198819), as applied to claim 1 above, further in view of Kim et al. (US Pat. 6,932,964).

Licht et al., in view of Reusmann et al. collectively teach an aqueous dispersion obtained by miniemulsion of instant claim 1 as described above. Licht et al. does not explicitly teach that R³-R⁶ of the polysiloxanes can further comprise heteroatoms. However, Kim et al. does teach polysiloxanes having such structural limitations (7:43-8:3 and 11:21-54). Such polysiloxanes taught by Kim et al. include those wherein one or more of the pendant groups (R¹ and R²) contain short poly(alkylene)oxide pendant groups wherein the total number of carbon atoms is less than 20. Kim et al. further teaches that R³-R⁶ can also comprise short poly(alkylene)oxide terminal groups wherein the total number of carbon atoms is less than 20). Licht et al. and Kim et al. are combinable because they are from the same field of endeavor, namely, aqueous dispersions comprising polysiloxanes. At the time of the invention, a person having ordinary skill in the art would have found it obvious to employ polysiloxanes having the heteroatom functionalized groups as taught by Kim et al. into the aqueous dispersions of Licht et al. and would have been motivated to do so because Kim et al. teaches that polysiloxanes comprising heteroatoms are preferred because they are water soluble and water dispersible (11:30-54 and 17:46-48). Licht et al. is concerned with preparing polyurethanes in miniemulsion. It follows

that incorporation of polysiloxanes, like those taught by Kim et al. would be desirable owing to the increased compatibility of the hydrophilic polysiloxane diols with the other ingredients within the aqueous miniemulsion.

Claims 1-10, 17-19, 21, 24, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reusmann et al. (US patent application publication 2003/0198819) in view of Licht et al. (WO 02/064657). For convenience, the English language equivalent US patent application publication 2004/0077777 will be relied upon.

Claims 1, 2, 6-8, 21, 24, 28 and 29: Reusmann et al. teaches an aqueous dispersion of a polysiloxane-polyurethane which is obtained by reacting polyisocyanates and isocyanate-reactive compounds; the isocyanate-reactive compounds comprising a polysiloxane having the structural limitations of formula I of instant claims 1, 2 and 24 (abstract and paragraph 0036).

Reusmann et al. does not explicitly teach that the polyurethane dispersion is obtained by a reaction of the corresponding building blocks in an aqueous miniemulsion. However, Licht et al. does teach an aqueous dispersion of a polyurethane which is obtained by emulsion polymerization of polyisocyanates and isocyanate-reactive compounds [including polysiloxane diols (paragraph 0028)] (abstract). Licht et al. further teaches that the aqueous dispersions are obtained by miniemulsion techniques which are carried out in a single aqueous reaction mixture (paragraphs 0062-0063 and examples). Licht et al. further teaches that the particle sizes of such dispersions are between 40-1000 nm (paragraph 0038). Reusmann et al. and Licht et al. are combinable because they are from the same field of endeavor, namely, aqueous dispersions of polyurethanes. At the time of the invention, a person having ordinary skill in the art would have

found it obvious to prepare the polyurethane compositions of Reusmann et al. using the process of miniemulsion as taught by Licht et al. and would have been motivated to do so because Licht et al. teaches that polyurethane dispersions prepared directly from the raw materials using a miniemulsion process has both an economic and environmental benefit compared to aqueous dispersions which rely on polyurethane prepolymers and polyurethane polymers (i.e., post polymerization dispersion) (paragraph 0010).

Claim 3: Reusmann et al. further teaches an aqueous dispersion wherein the polyurethane has been synthesized from (a) polyisocyanates (paragraph 0096), (b1) 100 mol%, based on the total amount of the polyols (b) of a polysiloxane polyol (paragraph 0095), and (c) dimethylolepropionic acid (paragraph 0095), which is a monomer having a hydrophilic group and is reactive toward isocyanate groups.

Claim 4: Example 1 of Reusmann et al. teaches that the polyurethane comprises about 10% by weight polysiloxanes of formula I of instant claim 1 (84 g polyester + 24 g siloxane polymer + 105.7 g of isocyanate + 16.8 g of DMPA + 12 g of butanediol = 243 g total of which 24 g is polysiloxane) (paragraphs 0095-0096).

Claim 5: Reusmann et al. further teaches that the aqueous dispersion further comprises additional polymers (paragraph 0073).

Claim 9: Reusmann et al. further teaches a method of making a coating using the aqueous dispersion of instant claim 1 (paragraph 0088).

Claim 10: Reusmann et al. does not explicitly teach that the compositions may be used as foam stabilizers. However, since Reusmann et al. does explicitly teach aqueous dispersions

meeting the structural requirements of claim 1, they can inherently be used in the form of a foam stabilizer.

Claim 17: Reusmann et al. further teaches additional components other than monomers (a) to (c) comprising at least two isocyanate groups, of which at least one group is a primary amine (paragraph 0055).

Claim 18: Reusmann et al. further teaches additional components other than monomers (a) to (d) comprising a reactive group which is an alcoholic hydroxyl group (paragraph 0058).

Claim 19: Reusmann et al. further teaches incorporation of other aqueous binders including polyacrylate resins (paragraph 0073). Whether or not such polyacrylate resins are prepared via free radical polymerization or by some other technique, for product-by-process claims, patentability is based on the product itself.

Allowable Subject Matter

Claims 25-27, 30 and 31 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 25-27, while Licht et al. suggests that including diols, the isocyanate-reactive groups may be thiol, primary and secondary amino groups (paragraph 0020). However, it is believed by the Examiner that this teaching is insufficient to satisfy the limitations of instant claims 25-27 when either taken alone with the teachings of Licht et al. or in combination of Licht et al. and Reusmann et al. Reusmann et al. only teaches polyols, that is polysiloxanes wherein

Art Unit: 1796

R⁵ and R⁶ is equal to OH. Reusmann et al. does not teach that the isocyanate reactive polysiloxanes include polysiloxane thiols (R⁵ and R⁶ is equal to SH), or polysiloxane amines (R⁵ and R⁶ is equal to NH₂ or NHR).

Regarding claims 30 and 31, Reusmann et al. does not teach or suggest polysiloxane diols which satisfy the molecular weight range of instant claims 30 and 31. Reusmann et al. is particularly concerned with polysiloxane diols having molecular weights greater than 1500, therefore, it would have been unobvious to select a polysiloxane diol having a molecular weight of between 500 and 838 as required by instant claims 30 and 31.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT LOEWE whose telephone number is (571)270-3298. The examiner can normally be reached on Monday through Friday from 5:30 AM to 3:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. L./
Examiner, Art Unit 1796
11-Nov-08

/Randy Gulakowski/
Supervisory Patent Examiner, Art Unit 1796